AMENDMENTS TO THE CLAIMS

A detailed listing of all claims that are, or were, in the present application, irrespective of whether the claim(s) remains under examination in the application are presented below. The claims are presented in ascending order and each includes one status identifier. Those claims not cancelled or withdrawn but amended by the current amendment utilize the following notations for amendment: 1. deleted matter is shown by strikethrough; and 2. added matter is shown by underlining.

1-24. (Cancelled).

Please add new claims 25-53 as follows:

25. (New) Imaging optics with main optics comprising:

a plurality of optical elements, said main optics being corrected for an observation radiation, and said imaging optics further comprising a transmissive, diffractive element arranged in the observation beam path of the imaging optics and wherein, due to the diffractive effect of the diffractive element, at least one aberration of the main optics is corrected for an inspection radiation having a different wavelength than that of the observation radiation.

26. (New) The imaging optics as claimed in Claim 25, wherein the diffractive element does not substantially change the imaging properties of the main optics for the observation radiation.

27. (New) The imaging optics as claimed in Claim 25, wherein the diffracted inspection radiation of a predetermined, non-zeroth order of diffraction is used for correction of said aberration.

28. (New) The imaging optics as claimed in Claim 25, wherein the diffraction efficiency of the diffractive element for the zeroth order of diffraction of the observation radiation is greater than the sum of the diffraction efficiencies of all other orders of diffraction of the observation radiation.

29. (New) The imaging optics as claimed in Claim 25, wherein the diffraction efficiency of the diffractive element for the zeroth order of diffraction of the observation radiation is at least 80%.

30. (New) The imaging optics as claimed in Claim 25, wherein the diffractive element is a phase grating.

31. (New) The imaging optics as claimed in Claim 25, wherein the diffractive element is a grating having symmetry.

32. (New) The imaging optics as claimed in Claim 31, in which the symmetry comprises rotational symmetry about the optical axis of the main optics.

33. (New) The imaging optics as claimed in Claim 25, wherein the diffractive element comprises annular depressions which are concentric.

34. (New) The imaging optics as claimed in Claim 33, wherein all the depressions have substantially the same depth.

35. (New) The imaging optics as claimed in Claim 33, wherein the depth of the depressions decreases as the radial distance from the optical axis of the main optics increases.

36. (New) The imaging optics as claimed in Claim 25, wherein the diffractive element is positioned on one side of a plane-parallel plate.

37. (New) The imaging optics as claimed in Claim 25, wherein the diffractive element is positioned on an optically effective surface of a refractive optical element of the main optics.

38. (New) The imaging optics as claimed in Claim 36, wherein the diffractive element is positioned only in an annular region on the side of the plane-parallel plate.

39. (New) The imaging optics as claimed in Claim 37, wherein the diffractive element is positioned only in an annular region on the optically effective surface of the optical element.

40. (New) The imaging optics as claimed in Claim 25, wherein the diffractive element is a blaze grating.

41. (New) The imaging optics as claimed in Claim 25, wherein the diffractive element has a blaze profile approximated in steps.

42. (New) The imaging optics as claimed in Claim 25, wherein the diffractive element is arranged in the region where the observation radiation has the greatest beam diameter in the main optics.

43. (New) The imaging optics as claimed in Claim 25, wherein the main optics comprise a second diffractive element which has a diffraction-enhancing and achromatizing effect for the observation radiation.

44. (New) The imaging optics as claimed in Claim 43, wherein the diffraction efficiency of the second diffractive element for the zeroth order of diffraction of the observation radiation is greater than the sum of the diffraction efficiencies of all other orders of diffraction of the observation radiation.

45. (New) The imaging optics as claimed in Claim 43, wherein the desired achromatization of the main optics for a wavelength region containing the wavelength of the observation radiation is caused substantially completely by the second diffractive element.

46. (New) The imaging optics as claimed in Claim 43, wherein the second diffractive element comprises a transmission grating formed on one side of a plane-parallel plate.

47. (New) The imaging optics as claimed in Claim 46, wherein the first diffractive element is positioned on one side of said plane-parallel plate, and the second diffractive element is positioned on the other side of the plane-parallel plate.

48. (New) The imaging optics as claimed in Claim 43, wherein the second diffractive element comprises a transmission grating formed on an optically effective surface of a refractive optical element of the main optics.

49. (New) The imaging optics as claimed in Claim 48, wherein the first diffractive element is provided on one side of said refractive optical element and the second diffractive element is provided on the other side of the refractive optical element.

50. (New) The imaging optics as claimed in Claim 25, wherein all optical elements of the main optics and the first diffractive element are formed of a maximum of two different materials.

51. (New) The imaging optics as claimed in Claim 25, wherein all optical elements of the main optics and the first diffractive element are formed of the same material.

52. (New) The imaging optics as claimed in Claim 25, wherein all optical elements of the main optics and the first diffractive element are mounted without cement.

53. (New) A method for the manufacture of imaging optics, comprising

computationally assembling a main optics comprising a plurality of optical elements corrected for a predetermined observation radiation;

computationally arranging a transmissive diffractive element in an observation beam path of the imaging optics and optimizing the transmissive diffractive element with regard to its phase function such that at least one aberration of the main optics is corrected by the diffractive effect of the diffractive element for an inspection radiation having a different wavelength than that of the observation radiation;

generating the optical data required for manufacturing the imaging optics thus computed; and

manufacturing the imaging optics on the basis of the generated optical data.